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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,822

03/18/2004

William Paul Cook

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LEXMARK INTERNATIONAL, INC.
ATT: JOHN J. McARDLE, JR.
740 WEST NEW CIRCLE ROAD
LEXINGTON, KY 40550

EXAMINER

KUMAR, RAKESH

ART UNIT

PAPER NUMBER

3654

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/803,822	Applicant(s) COOK ET AL.	
	Examiner Rakesh Kumar	Art Unit 3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31 and 39-51 is/are pending in the application.
- 4a) Of the above claim(s) 32-38 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31, 39, 40 and 47-51 is/are allowed.
- 6) ☒ Claim(s) 41-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (U.S. Patent Number 6,837,489) in view of Takagi et al. (U.S. Patent Number 4,986,525) in view of Park (U.S. Patent Number 6,648,322) and in further view of Matsuda (U.S. Patent Number 6,568,674).

Referring to claims 41-46. Kim discloses an automatic document feeder (ADF) apparatus comprising:

a motor 70;

a pick mechanism consisting of a clutch member 22, gears 21, 25, 11 and a pickup roller 10 operatively connected to the motor 70 (Figure 1 and 3), creating a feed nip region as the roller 10 engages the topmost media sheet in the media tray (Figure 1), the pick mechanism (gears 21, 25, 11 and a pickup roller 10) positioned to move a media sheet 1 from an input tray;

a first gear train set 60 (gears 62, 61) having a first ratio and operatively connecting the motor 70 to the pick mechanism (gears 21, 25, 11 and a pickup roller 10);

a feed nip created by a distribution roller 50 in contact with the media sheet 1 operatively connected to the motor 70 to receive the media sheet 1 and forward the media sheet 1 along a media path, the feed nip positioned downstream from the pick mechanism (gears 21, 25, 11 and a pickup roller 10);

a second gear 80 (gears 81, 82, 83) set having a second gear ratio and operatively connecting the motor 70 to the feed nip created by a distribution roller 50 in contact with the media sheet 1;

the motor 70 drives the pick mechanism along with a intermediate roller 110 used to maintain steady tension in the media sheet 1 as it is moved to the feed nip of the distribution roller.

Kim does not disclose positioning a feed nip a distance less than a length of the media sheet downstream from the pick mechanism, in addition Kim does not specifically disclose the pick mechanism to be operating at a first speed and the feed nip roller operating at a different second speed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Kim to reduce the distance between the pick mechanism and the feed nip to be less than the length of the media sheet such that at least one roller maintains contact with the media sheet at all times while being driven

in the media path because a consistent level of tension in the media sheet is maintained in order to reduce media buckling and misalignment of the media sheet as it is moved along the media path.

Further more, Kim discloses a first and a second gear train disposed to transfer power to the pick mechanism and the feed nip roller. These two gear trains differ in configuration and by the number of gears comprising the gear sets, thus indicating that the rotational torque and speed transferred by the motor to the above mentioned mechanisms is construed and understood to be different. By maintaining different speeds at the two ends, tension in the media sheet can be maintained because the mechanism would reduce paper jams in the process of being driven in the media path.

Takagi discloses a sheet feeder device comprising a swing arm 15 having a first gear 16 disposed on the first arm and a second gear 17 disposed on the second arm. Gears 16 and 17 are free to rotate in conjunction with the pivotal gear 14 as a torque is transferred from motor M to feed roller 36 (Figure 2A-2B, Col 5 lines 23-29, Col 7 line 15). The swing arm 15 is positionable between a first orientation with the first gear 16 in contact with idler gear 19 and a second orientation with the second gear 17 in contact with idler gear 20. The swing of the swing arm 15 as shown by Takagi in figure 2A and 2B is understood and construed to be in a range between 0° to 45°.

Takagi does not disclose the first arm having an even number of gears, and the second arm having an odd number of gears

Park discloses a paper feeder device comprising a movable first arm assembly 43 and a second arm assembly 46 consisting of multiple gears disposed on the arms. The first arm assembly 43 having an even number of gears (43a, 43b, 43c and 43d) and the second arm assembly having an odd number of gears (45, 45b, and 45c) (Figure 6 and 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings Kim in view of Park and Takagi to include a movable swing arm consisting of an even number of gears on a first arm and odd number of gears on the second arm to further vary the rotational speed being transmitted from the motor 70 to the distribution roller 50 as disclosed by Kim.

It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings Kim in view of Park and Takagi to include a movable swing arm near a distribution roller as to engage the feed nip with either the first or the second gear to controllably vary the rotational speed of the distribution roller and maintain variable tension as the media sheet progress through the media path.

Matsuda discloses a feed apparatus comprising a metering nip created by aligning a discharge roller 23 with a driven roller 24 positioned downstream from the feed nip between rollers 11 and 24 and operating at a speed greater than the speed driving the feed nip rollers 11 and 24 (Figure 2 and 3). Matsuda also discloses the discharge roller 23 having a torsion spring clutch 43 to prevent a slip of the discharge roller 23 when the media sheet is in contact with both the metering nip and the feed nip

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(Col 5 line 39-60). Further more Matsuda discloses using a one way clutch in the pick roller gear 20 in the pick roller 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Kim in view of Park and Takagi to include a metering nip as taught by Matsuda on the path beyond the distribution roller 50 in Kim, operating at a speed higher than the distribution roller 50 because it would prevent media paper slippage, when the media is moving between the feed nip and the metering nip.

In addition a slip clutch mechanism can be disposed either in the metering nip rollers or the preceding distribution rollers to prevent a slippage of the rollers as the media sheet traveling at one speed enters a metering nip, wherein the metering nip is rotating at a different speed, a slip clutch can to disposed on the pick mechanism because it would slippage of the rollers as the media is pulled at a higher speed.

Allowable Subject Matter

Claims 31,39,40,47-51 are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schoedinger (US 6,227,534) teaches a pick arm mechanism.

Ha (US 6,765,698) teaches a pivoting swing arm (21).

Kang (US 2004/0109056) teaches of a reversible drive mechanism.

Any references not explicitly discussed above but made of record are considered relevant to the prosecution of the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh Kumar whose telephone number is (517) 272-8314. The examiner can normally be reached on 8:00AM - 4:30PM.

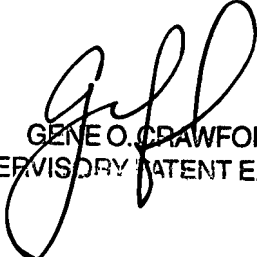
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Crawford can be reached on (571) 272-6911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see

<http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK
September 1, 2007


GENE O. CRAWFORD
SUPERVISORY PATENT EXAMINER